WEBSTER SYSTEM RADIATION

CONCEALED · LIGHTWEIGHT · FOR CONVECTION HEATING

A NEW FEATURE OF

Webster
Systems of
Steam Heating

WARREN WEBSTER & CO.
CAMDEN NEW JERSEY

Established 1888 · The Pioneers of the Vacuum System of Steam Heating

SOME QUESTIONS ANSWERED

1. What are Webster Systems?

Webster Systems are basic systems of steam circulation using steam or "vapor" heating. Each includes boiler, piping, radiators, fittings and regulating devices, designed and assembled to most effectively accomplish the heating of each building. However, Warren Webster & Company do not manufacture, sell or assume responsibility for boilers, piping or other equipment not of their manufacture nor for service to this apparatus. We do not install heating systems—Webster Systems are installed by leading heating contractors. We do, however, go to great length to insure that installations shall be made correctly.

Webster Systems include these important elements:

SERVICE by a comprehensive organization of trained steam heating specialists who help determine the type of system best suited to your particular residence, your locality and your special operating conditions. This service selects the correct Webster System equipment to insure circulation of steam at least cost and inspects work during installation and on completion, as conditions warrant.

EXPERIENCE gained in providing more than 67,000 successful Webster Systems of Steam Heating.

WEBSTER ENGINEERING METHODS developed by our experience and in our laboratories. They assure correct application of Webster System Equipment.

2. What Webster System is recommended for residence heating?

The Webster Type "R" (or vapor) System is the Webster System most extensively used for residence heating, although Webster Vacuum Systems using vacuum pumps and Webster Open Return Systems using condensate pumps are frequently employed on very large residences or estates. The Webster Type "R" System is described briefly on Page 15 of this booklet. Do not be confused by the term "vapor." It simply means steam at very low pressures.

3. What are the advantages of the Webster Type "R" System?

The advantages of the Webster Type "R" System are (1) Quick heating-up in the morning or after a prolonged shutdown. (2) Adequate heat, with every radiator receiving its share of steam. A Webster Metering Orifice at each radiator supply connection assures balanced distribution. The radiator at the far end of the house gets heat as quickly as the radiator nearest the boiler. (3) Even, comfortable room temperatures. The modern automatic firing devices using oil, gas or coal give better results when used with a Webster Type "R" System. Better performance, too, with hand-fired

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SOME QUESTIONS ANSWERED

boilers. (4) Reliability and safety assured by equipment of high quality proved by years of service—*no experiments.*

4. What is Webster System Radiation?

Webster System Radiation is the name given lightweight fin-type "convectors," heating effect being accomplished by convection or air-flow. Description begins on Page 2.

5. Can Webster System Radiation be used for hot water heating or one-pipe steam systems?

No. Webster System Radiation is designed for use with Improved Webster Systems of Steam Heating—low pressure, two-pipe systems of steam circulation where return piping is either vacuum, open-return, or "vapor."

6. Can radiators other than Webster System Radiation be used with a Webster System?

Yes. Where owners prefer to use direct radiant heat from cast iron radiators, unit heaters, etc., a basic Webster System can be used to provide steam circulation. Webster Radiator Supply Valves and Thermostatic Traps are used.

7. Can I have air conditioning with a Webster System?

In a major portion of the United States, air conditioning is 80% heating. Therefore, a Webster System is an important part in so-called air conditioning. Other elements of air conditioning such as humidification, circulation, cooling, etc., may be provided now or later.

8. What is the cost of a Webster System relative to other forms of heating?

Webster Systems are steam heating systems of the highest quality in every respect and, therefore, the first cost is slightly more than other systems of lower quality. Long life and low maintenance and operating cost go far to offset the higher initial cost.

9. How can I get a Webster System for my home?

Consult your architect or engineer. Webster Systems are sold and installed by leading heating contractors throughout the United States and Canada. Your local contractor can give you a quotation on a Webster System for your requirements by phoning or writing the nearest Webster Branch Office, the address of which is given on the back cover of this booklet. If requested our Branch Office will suggest names of contractors. More information concerning this question is given on Page 16.

10. Who are Warren Webster & Company?

See Page 20.

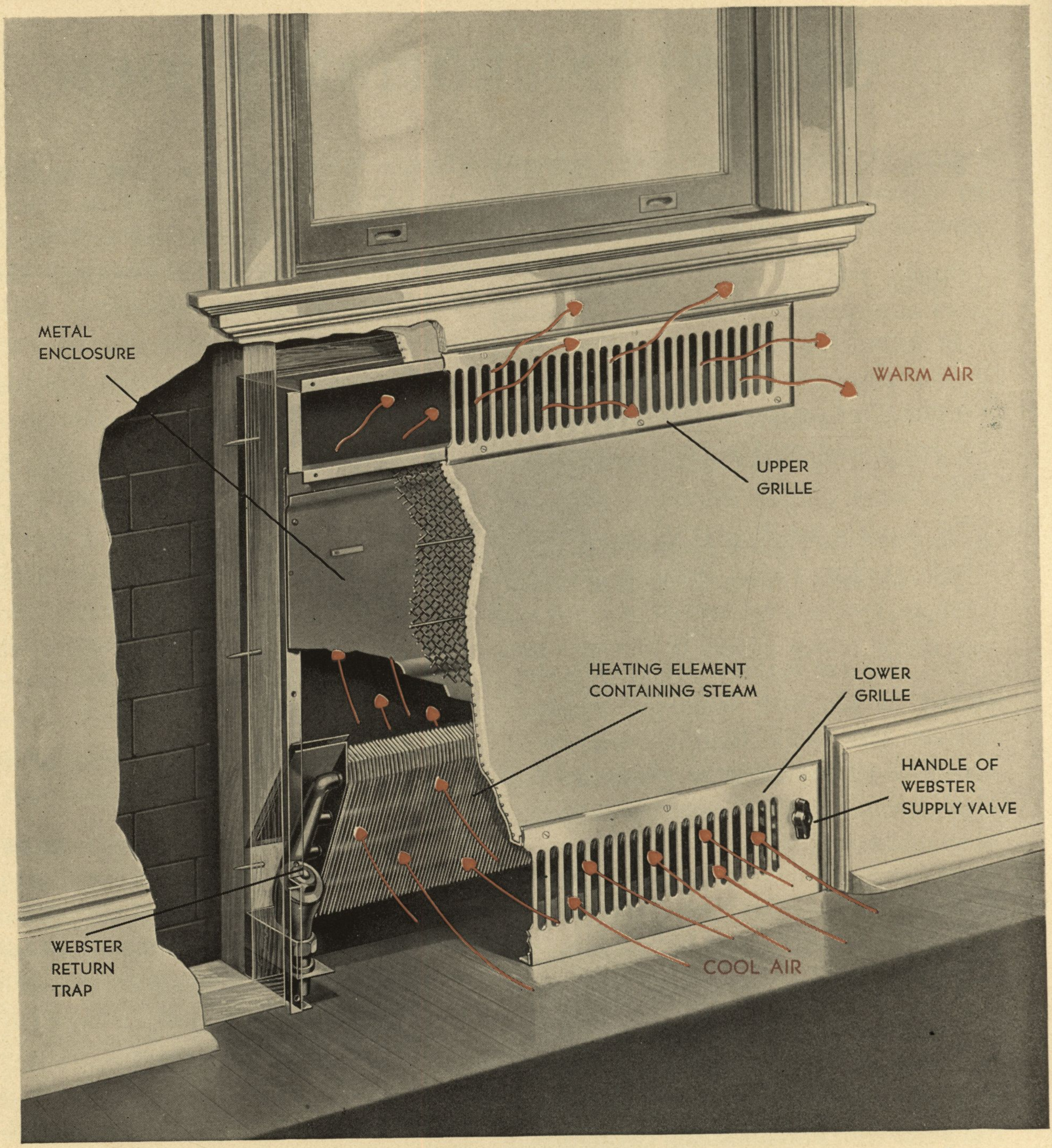


Fig. 1. **HOW WEBSTER SYSTEM RADIATION HEATS THE ROOM**—Steam is brought from a boiler or other source to the *heating element* through the supply piping. The Webster Supply Valve Handle is located conveniently outside the lower grille, enabling the room occupant to turn on or completely shut off heat as desired. The Webster Thermostatic Return Trap holds steam in the heating element until condensed, thus preventing waste of heat.

Air from the room is drawn in through the lower grille and passes upward over the heating element. As its temperature is raised the air ascends and re-enters the room through the upper grille. As the warm air gives up its heat by contact with objects in the room and by mixture with the cooler air its temperature drops and it falls to the floor level where it re-enters the lower grille. This natural circulation of air—called convection—is almost imperceptible, yet positive, tending to distribute heat uniformly throughout the room.

COMFORTABLE • CONTROLLABLE • CONCEALED

WEBSTER SYSTEM RADIATION

Webster system radiation is lightweight, concealed radiation in which heating effect is accomplished by convection, i.e., "transfer of heat by means of currents of air, resulting from changes of temperature and other causes." Convection heating is illustrated in Figure 1.

In Webster System Radiation the entire heating element, including radiator and connections, is concealed from view, being fully contained in a metal enclosure installed within the wall of the room. Where it is impractical to locate radiators within the wall an attractive metal cabinet may be used.

Advantages of Concealed Radiation

Webster System Radiation replaces unsightly radiators exposed to view because the heating element is entirely concealed. Only the inconspicuous grilles or metal front can be seen and their pleasing design harmonizes with any decorative plan. In this connection the illustrations on pages 4 and 5 will be of interest.

When radiation is placed within the wall, the additional floor space—which would have been occupied had exposed radiators been used—can be put to good advantage.

The enclosures for Webster System Radiation are so designed that flow of air is away from the wall and out into the room. Dust particles are therefore diverted from walls and ceilings, and discoloration is minimized. In the same manner the soiling of drapes and hangings is materially reduced.

Undivided Responsibility

An outstanding feature of Webster System Radiation is the combining of supply valve *with orifice*, heating element and return trap in a single compact unit. This design not only simplifies installation but places responsibility for the correct functioning of these closely related items in the hands of one manufacturer. In many cases, heretofore, three or four different companies entered into the situation. Installation of Webster System Radiation places entire responsibility on a single company which has been a leader in the steam heating field for many years and an organization of unquestioned integrity and financial standing.

Outstanding Mechanical Excellence

It has always been the policy of Warren Webster & Company to be interested in Webster Systems *after installation.* The cumulative experience gathered as a result of this policy throughout the forty-seven years' existence of the Company is constantly being used in designing and making Webster System equipment to best meet the requirements of steam heating service. Webster System Radiation is no exception; it is *a product of outstanding mechanical excellence.*

Balanced Steam Distribution

Included with each supply valve in Webster System Radiation is a sleeve-type metering orifice. Each orifice is specially selected for the individual radiator. The purpose of these orifices is to balance distribution of steam so that each radiator receives steam at the same time and substantially in proportion to its requirements, and to make the system controllable from a central point. Webster System Radiation is applicable to structures ranging in size from the residence to the largest skyscraper.

Webster System Radiation has been designed for use with Improved Webster Systems of Steam Heating—low pressure, two-pipe systems of steam circulation where return piping is either vacuum, gravity or "vapor." Webster System Radiation cannot be used for hot water heating or one-pipe steam systems.

Easy to Install

Webster System Radiation is "easy" on the steamfitter and, consequently, on the pocketbook of the owner. Because supply valve, heating element and return trap are a single unit assembly, considerable roughing-in work is eliminated. The gusset plates in the metal enclosure definitely locate the position of the supply and return connections. In fact, the enclosure can be set in the recess and the gusset plates used as a template to locate the "stub-ups."

The unit is light and easy for one man to handle. The connections are of the simple union type. The heating element can be easily removed from every type of enclosure without injury to the wall construction.

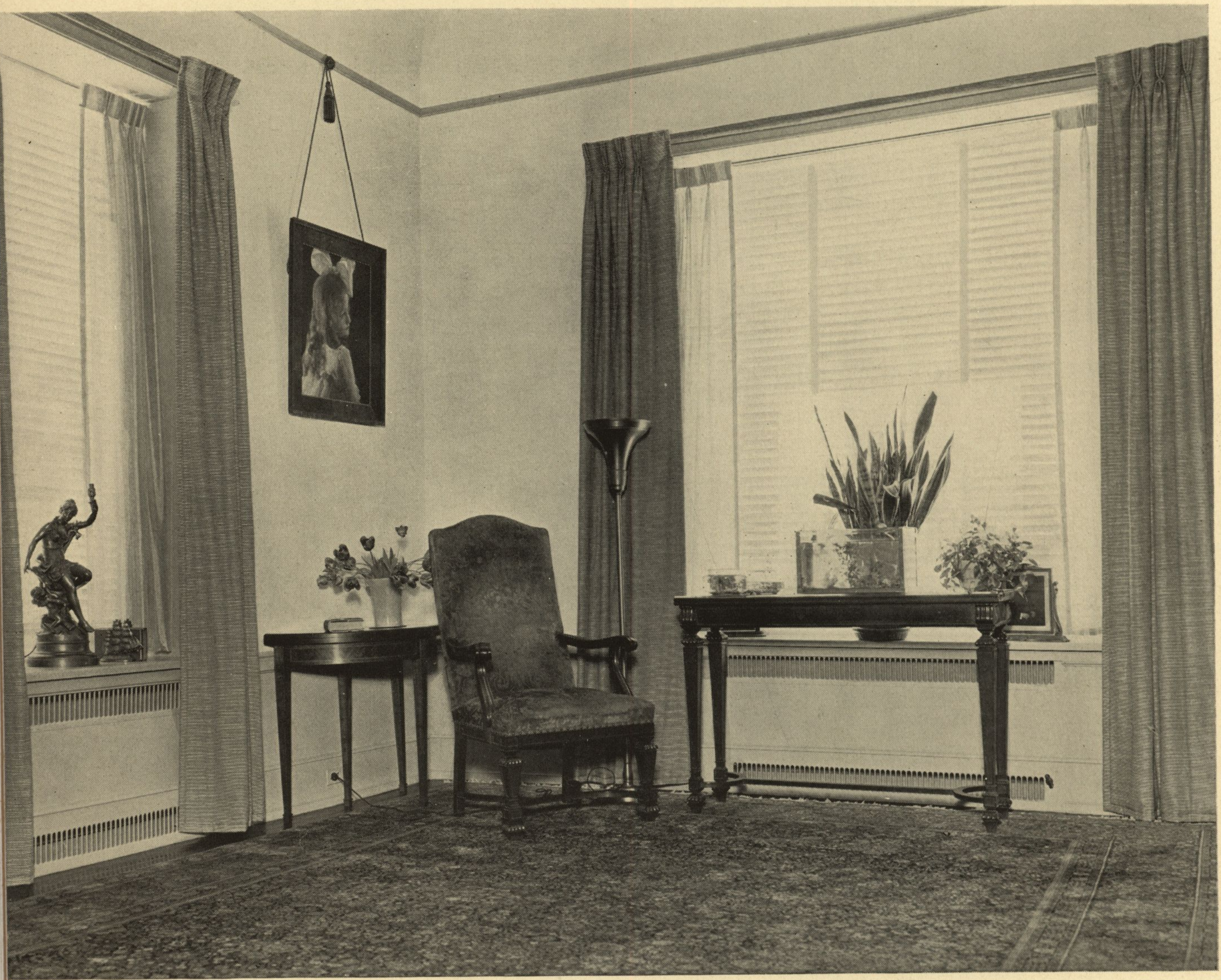


FIG. 2. Illustration of a residence interior suggesting the manner in which Webster System Radiation harmonizes with decorative ideas. Here radiators are inconspicuous and additional floor space is made available. Women, especially, will appreciate the lessened cleaning work when radiators are concealed and out of the way.

COMPLETE HARMONY WITH

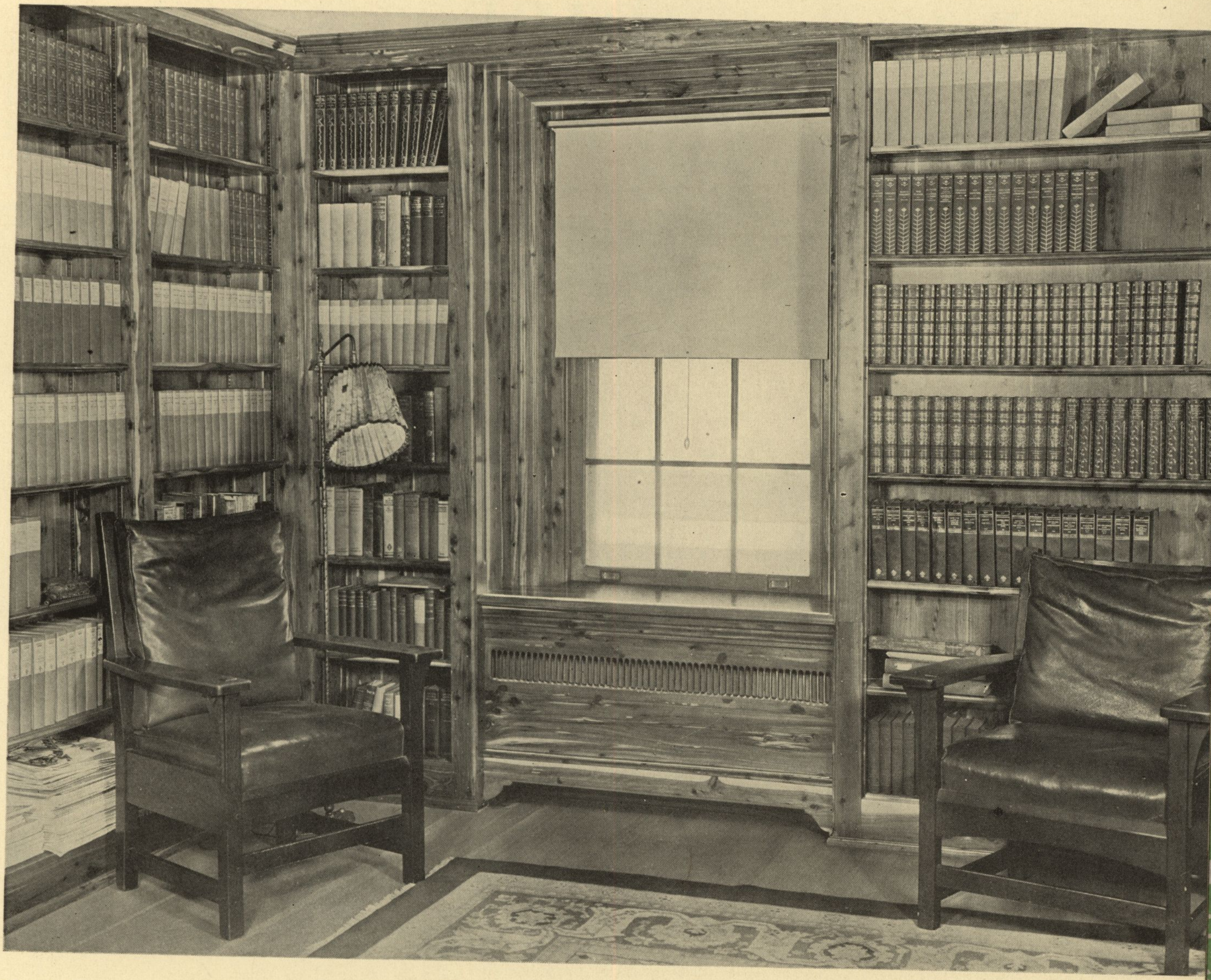


FIG. 3. Webster System Radiation, because of a wide selection in size and in type of enclosure, meets the demands of varied decorative treatments. Note in the library pictured above how effectively the concealed radiator blends with the attractive wood finish in the natural grain.

A WIDE CHOICE OF ENCLOSURES

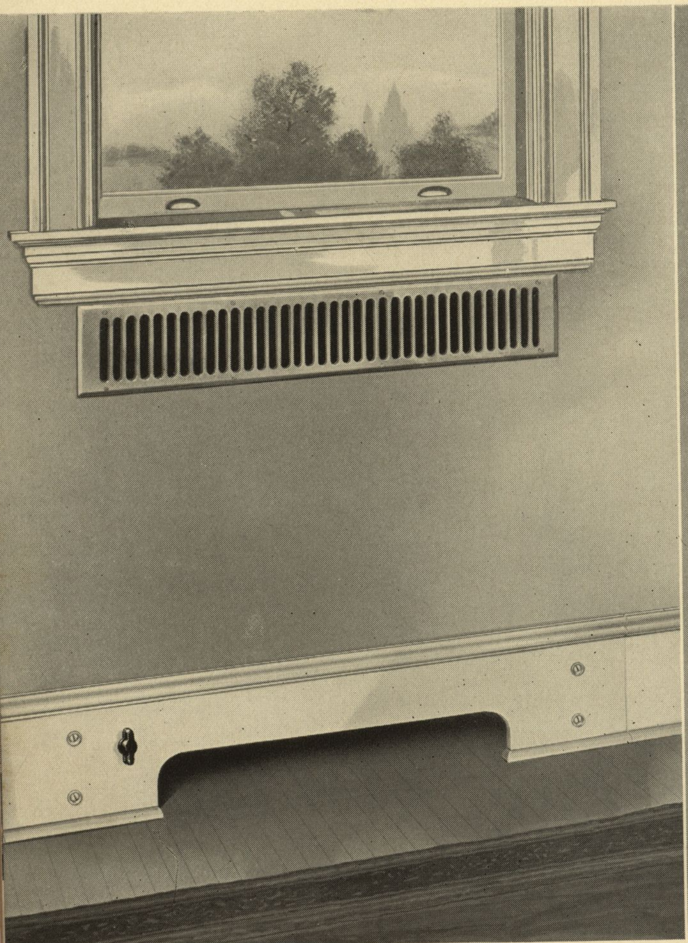


FIG. 4. TYPE AK WEBSTER SYSTEM RADIATION is placed within wall construction. This illustration shows an arched inlet so made that heating element is removable simply by pulling away handle, unscrewing four wood screws and withdrawing baseboard. The Type AK can be furnished with lower grille as in Fig. 1. Enclosures are applicable to all types of building construction without special framing or furring.

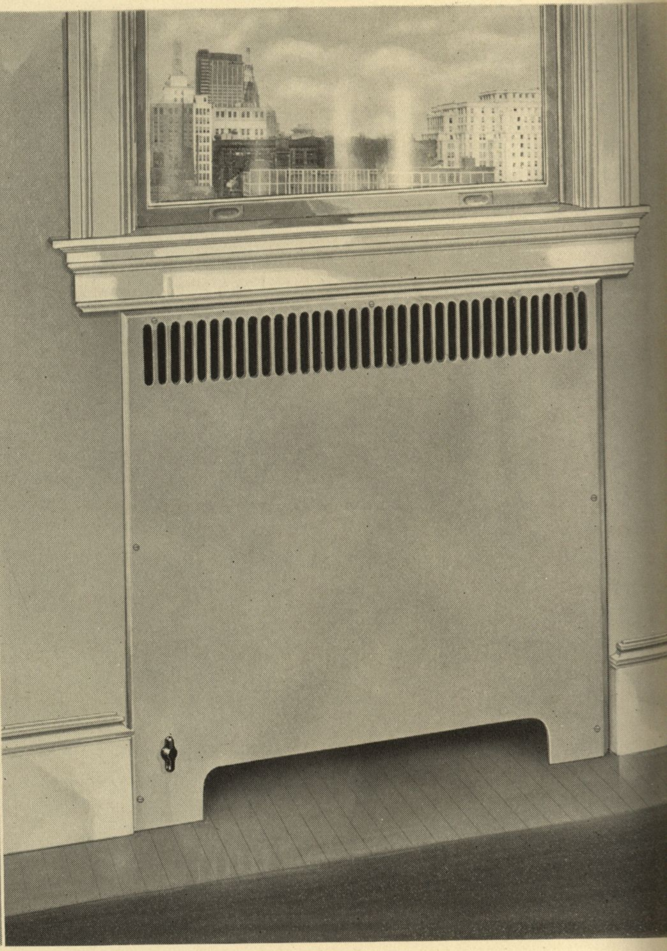


FIG. 5. TYPE AM WEBSTER SYSTEM RADIATION is also enclosed within the wall construction but is faced with a complete metal panel instead of finished wall surface. This type is available with either arched inlet opening shown above or with inlet grille. The panel is furnished with a baked prime coat ready for application of paint harmonizing with the decorative scheme of the room in which it is placed.

The requirements of the most varied architectural treatments and building construction are met by at least one of the following types of Webster System Radiation:

1. Type AK—Enclosed within a plaster, wall-board or tile surfaced wall, with outlet grille in front. Choice of front inlet grille or arched inlet, either separate from or in baseboard.
2. Type AKT—Same as Type AK except that outlet grille is at top.
3. Type AM—Enclosed within wall, with complete metal front panel. Choice of inlet grille or arched inlet opening.
4. Type AE—A free-standing exposed metal cabinet with choice of inlet grille or arched inlet opening.
5. Type AEH—A wall-hung, exposed metal cabinet with inlet opening underneath and front outlet grille.

Provision has been made in all types of enclosures for *positive* control of heat by extending the Webster Supply Valve handle through the lower grille opening. The handle is of pleasing shape and has been placed in an inconspicuous location yet is easily reached if the room occupant desires to turn on or shut off heat.

The enclosures are formed from sheet metal of cold rolled steel and are finished with a baked prime coat. They have been designed so that the entire heating element is accessible at any time. It is not necessary to destroy plaster or tile wall construction to reach the heating element. The grilles and metal front are held in place by screws.

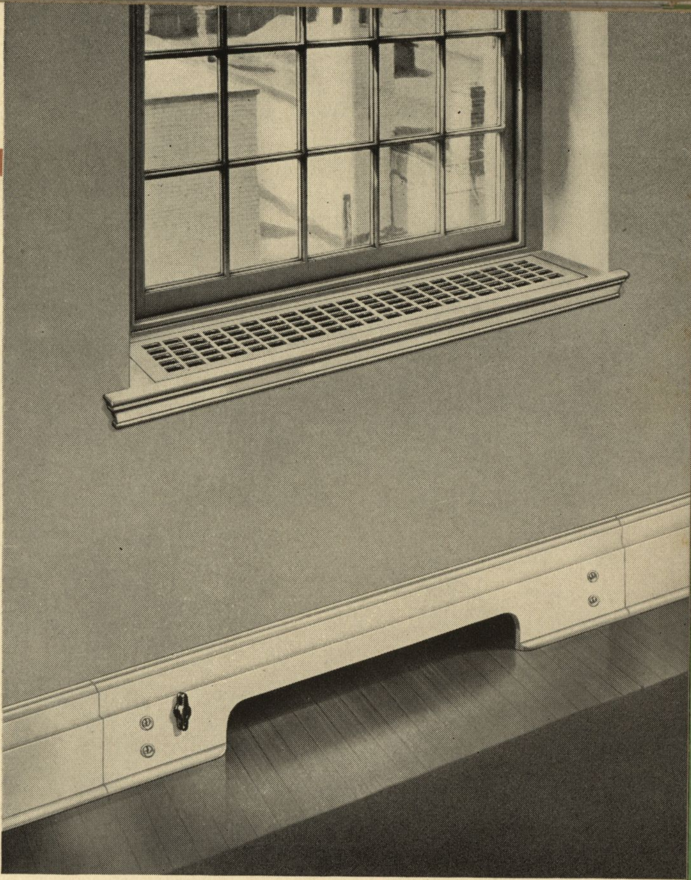


Fig. 7. TYPE AKT WEBSTER SYSTEM RADIATION is similar to Type AK except that it has a top outlet grille for use with recessed windows.

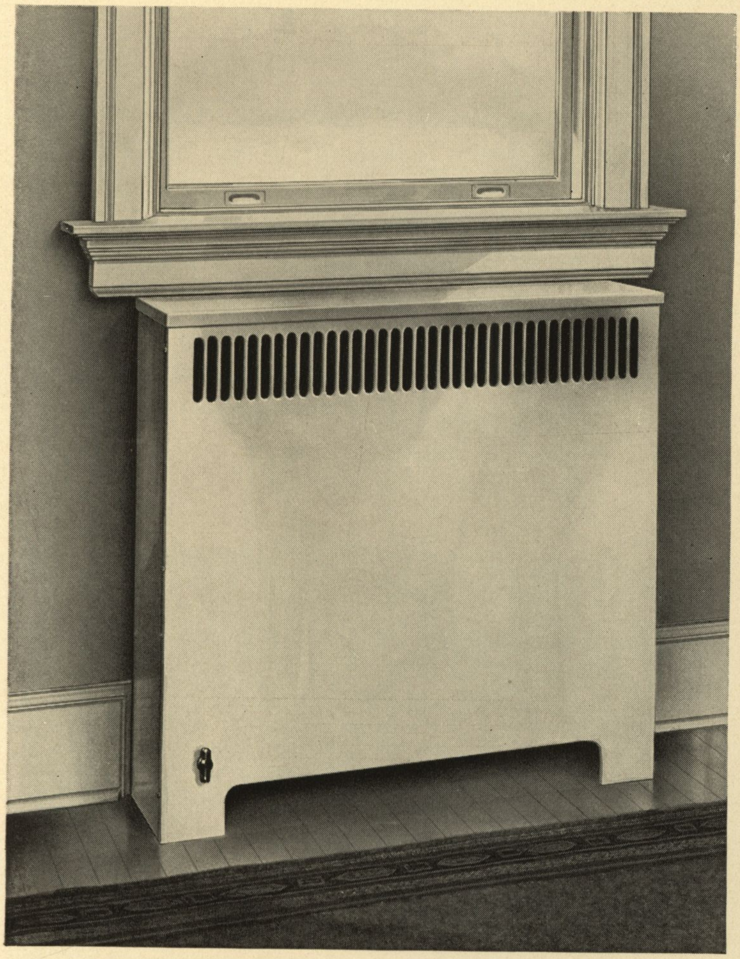
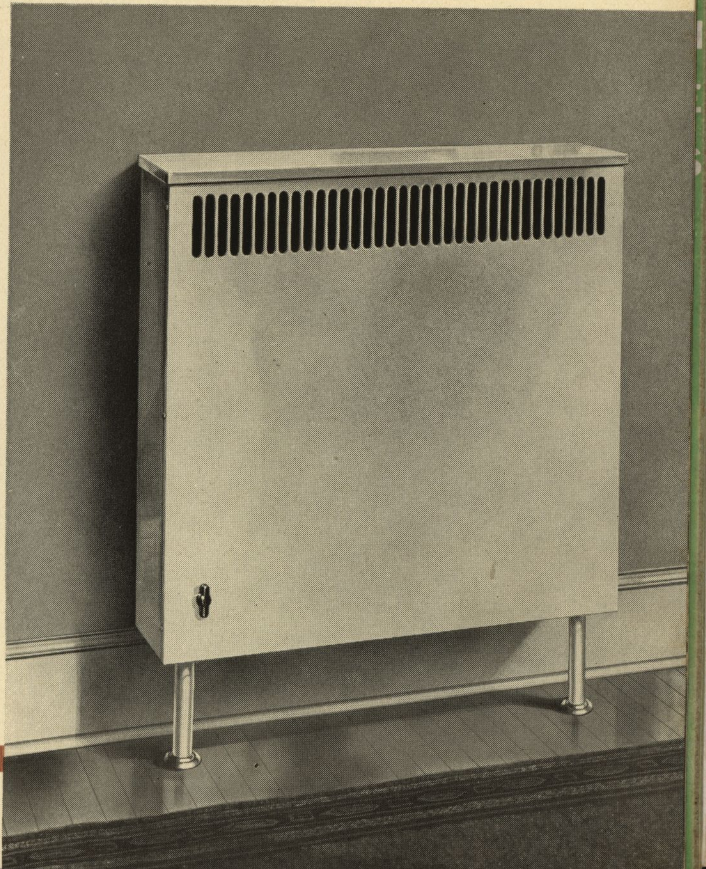
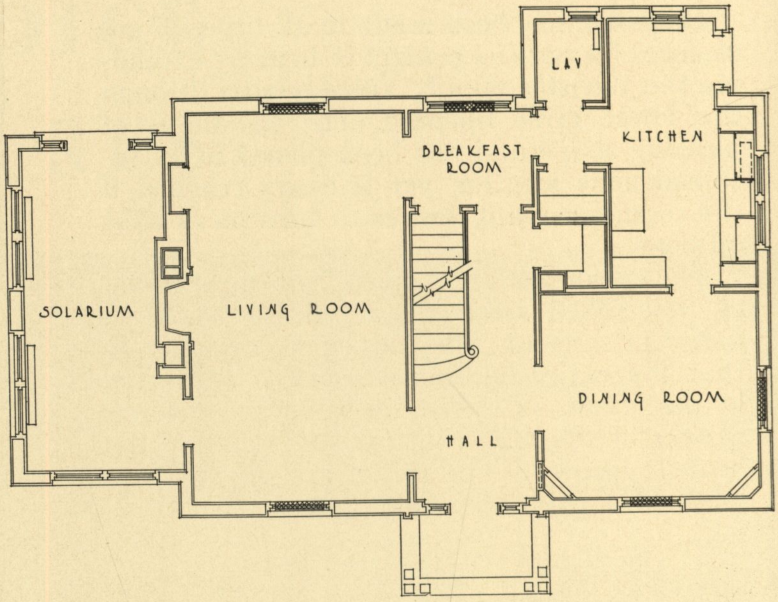


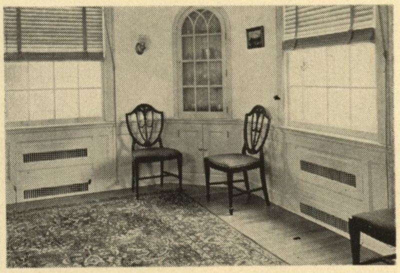
Fig. 6. TYPE AE WEBSTER SYSTEM RADIATION is used where it is not feasible to place the radiator within the wall. This type has a wide use in modernizing existing homes and buildings. The cabinet is furnished with a baked prime coat ready for application of decorative paint after installation.

Fig. 8 (*Below*). TYPE AEH WEBSTER SYSTEM RADIATION is available for those who prefer a wall-hung cabinet with easy access below for cleaning.





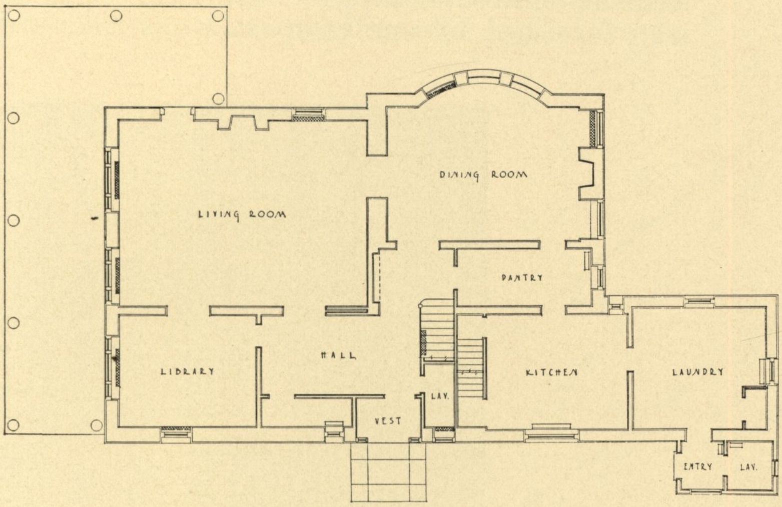
The Colonial-style residence of Gail A. Mills, Esq., Princeton, New Jersey, provides an interesting example of efficient heating with the Improved Webster System of Steam Heating and Webster System Radiation in the medium-sized house. Mr. Mills' home has eleven rooms, with three baths, and is heated by oil burner. There are twenty-two units of Webster System Radiation, installed by J. B. Redding & Sons, Princeton, N. J., Heating Contractors. The original estimate for oil consumption was 2,930 gallons. During the first heating season, 1933-34, consumption with the Webster System totaled only 2,013 gallons of No. 3 oil, a saving of 917 gallons. In the 1934-35 heating season, fuel consumption was further reduced to 1,642 gallons of No. 4 oil. The temperatures maintained were day 72° and night 62°. The Webster System has met every demand made upon it for quick action and perfect heating comfort.



"Even on the sub-zero days, the temperature varies not more than one or two degrees. We are very much pleased with our Webster System.

"With regard to the concealed radiation, I had heard it said that this type of radiation was not efficient. Our installation is 100 per cent efficient."

G. A. MILLS.



The completely modernized residence of Richard J. Seltzer, Esq., 151 W. Tulpehocken Street, Germantown, is one of the most thorough home modernization programs undertaken in Philadelphia in recent months. Renovation included the installation of a Webster System of Vapor Heating and forty-one units of Webster System Radiation. The program was completed in February, 1935, with George M. Bateman, Philadelphia, acting as modernization heating contractor. Mr. Seltzer's home has eighteen rooms, with six baths, and is heated by oil burner. Architectural plans were made by Edmund B. Gilchrist.

With the exception of the service portion, all of the radiation on the first two floors is concealed. It was selected to harmonize with the decorative scheme. There is no exposed piping anywhere in the house.

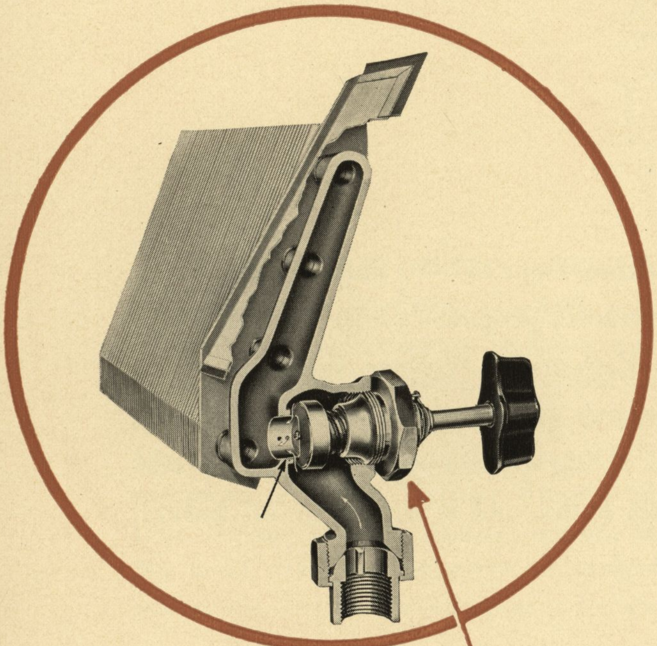
"The Webster System," Mr. Seltzer said, "has been most satisfactory, both as to economy and heating service. Radiators heat evenly and rapidly."

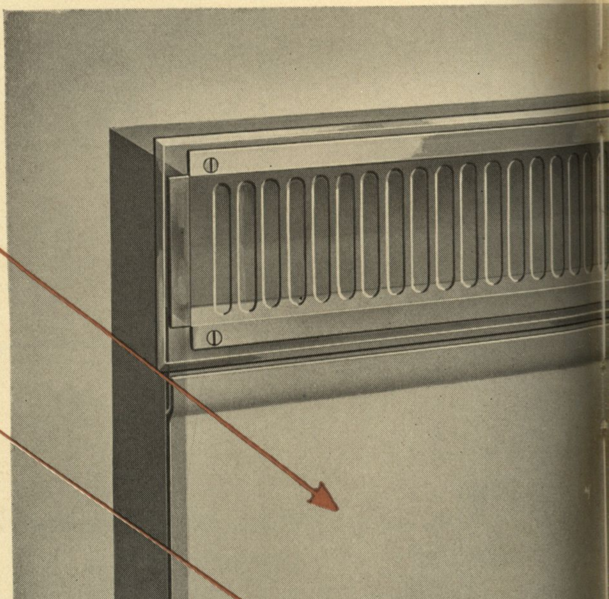
RADIATION OF OUTSTANDIN

7. UNDIVIDED RESPONSIBILITY—The heating element, enclosure, supply valve, orifice and return trap furnished by one company.

1. ENCLOSURE of heavy gauge, cold rolled (furniture) steel finished in baked prime coat. May be installed back of any wall surface. No special framing or furring required. Length of enclosure is total length of recess—unnecessary to add for valve and trap connections.

2. HEATING ELEMENT entirely of non-corrosive materials, *designed for complete drainage.* Smooth-surfaced fins minimize lodging of dust and dirt. Installed on an angle to provide maximum heat per unit of space occupied. Tubes and headers connected by Mueller Streamline Joints.





3. WEBSTER "THREE-POINT" SUPPLY VALVE built into supply header. Embodies:

(a) ***Sleeve Type Metering Orifice*** specially sized for the individual radiator, providing equalized or balanced distribution of steam throughout system. Installation of Webster System Radiation provides an Improved Webster System of Steam Heating.

(b) ***Adjustment.*** In standard arrangement "open" provides just enough heat for average requirements. Where more than average heat is desired, easily made adjustment provides 40% Excess Heat delivery in "wide-open" position.

(c) ***Accessible, Inconspicuous Valve Handle*** provides positive means for complete shutoff, making damper control unnecessary.

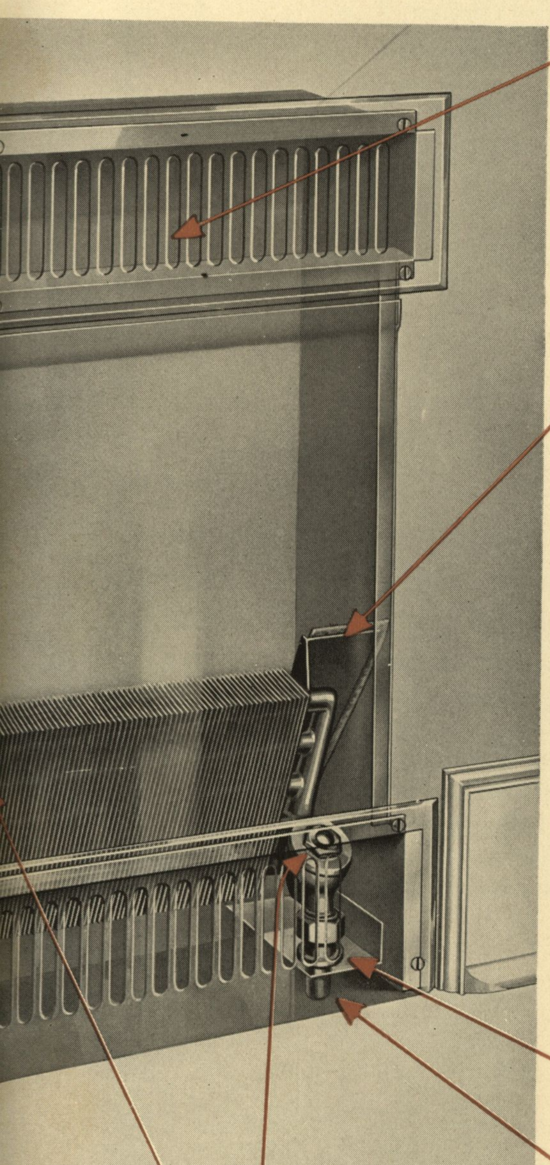
4. UNION CONNECTIONS for both steam and return furnished as part of radiation. Units furnished "left hand" or "right hand."

5. Fixed Support for heating element integral with enclosure. No adjustment or legs necessary.

WEBSTER SYSTEM RA

G MECHANICAL EXCELLENCE

8. A wide choice of RADIATOR SIZES in each of 5 types of enclosures permits selection of ***standard units*** to meet almost every demand.

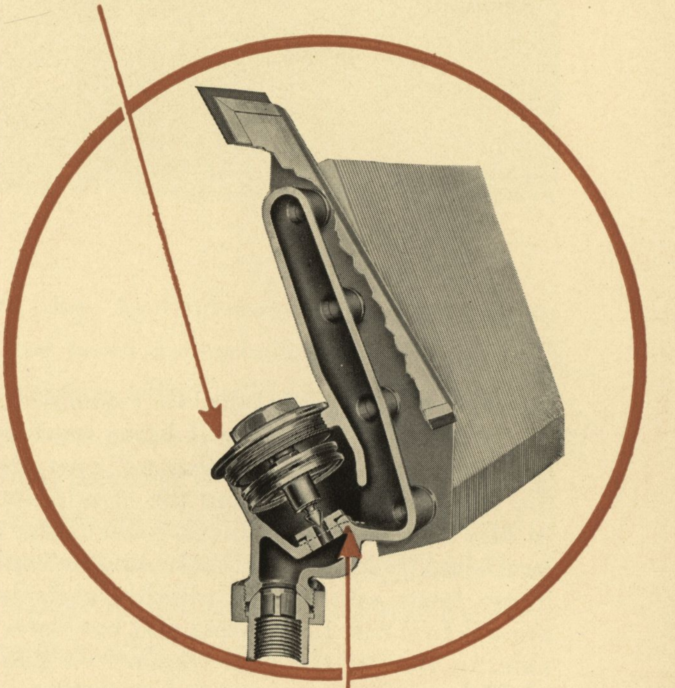


6. Supply Valve, Heating Element and Return Trap combined in a single compact unit, eliminating time and labor ordinarily required to rough-in and hook-up separate units. Complete Heating Element including valve and trap removable in all types.

9. METAL GRILLE of pleasing design. Lower grille or metal front removable for cleaning or access to heating element by removing screws.

10. Header Baffles of flexible composition material assure silence and guide flow of air through fins.

11. WEBSTER THERMOSTATIC TRAP built into return header. Removable sharp-edged seat, 60° cone valve piece.

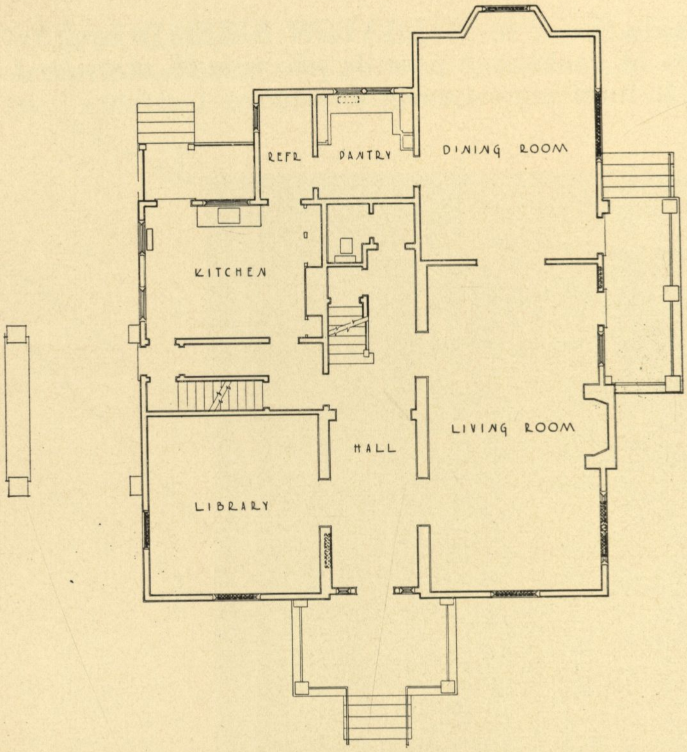


12. Complete condensate drainage from all tubes provided for by raceways around valve seat.

13. Pipe Guides of special composition metal serve as templates for locating pipe stub-ups without measurement on the job, and assure quiet operation—no annoying scrape of expanding or contracting pipe against sheet metal.

14. Pipe "Stub-ups" uniform in height, projecting vertically above finished floor and simplifying steam fitter's work.

IATION A NEW FEATURE OF WEBSTER SYSTEMS OF STEAM HEATING

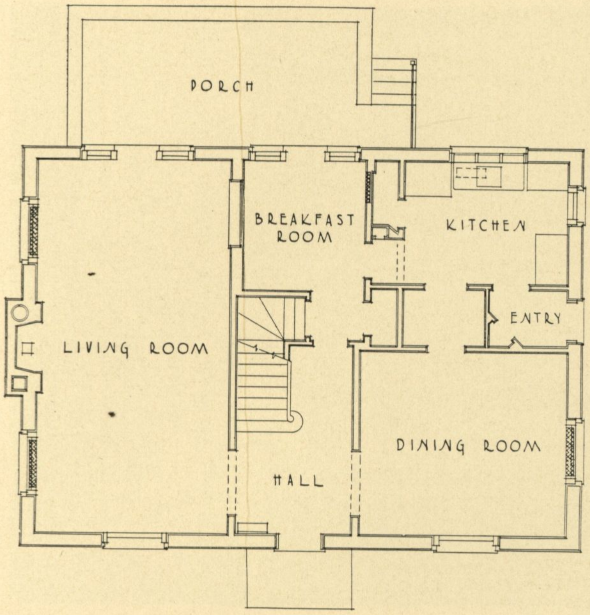


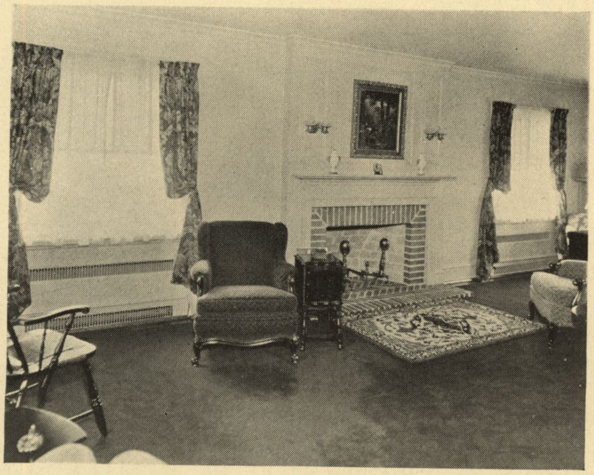
In the residence of John C. Ferenbach, Esq., Kingston, Pennsylvania, an Improved Webster System of Steam Heating is being used in connection with a coal-burning boiler, fired by automatic stoker. After two seasons' operation, Mr. Ferenbach expressed complete satisfaction with the installation, both from the standpoint of economy and heating comfort. The heating system in Mr. Ferenbach's eighteen-room home was brought up to date in the fall of 1933, with Shulte Brothers, Wilkes-Barre, acting as Modernization Heating Contractors. Operation is quiet. The house heats evenly and rapidly, each radiator receiving its full share of heat. The average annual fuel cost for heating and hot water is $125, which Mr. Ferenbach considers "quite reasonable, in view of the cold weather we had during the period covered." There are nineteen units of Webster System concealed radiation.

"I am well pleased with the concealed radiation and find that the Webster System heats my home quickly and efficiently. The operation is quiet at all times and very economical.

"My average heating and hot water cost combined for the last two years has been $125 a year. In view of the cold weather that we had during the period covered and the convenience of the stoker, this figure seems quite reasonable."

J. C. Ferenbach.



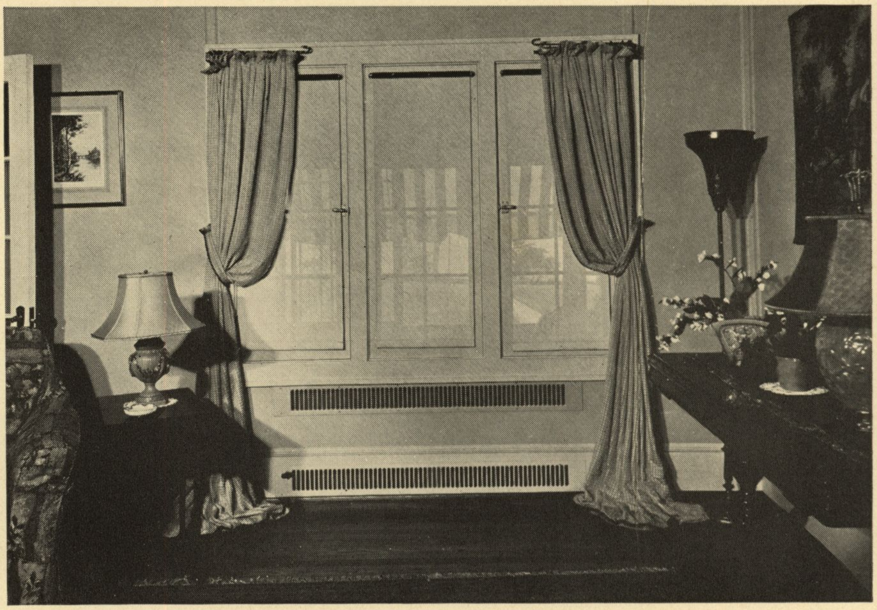


In the Colonial-style residence of Leo F. Laughren, Esq., in University City, Missouri, an Improved Webster Type R System of Steam Heating has given a convincing demonstration of its ability to provide trouble-free, year-round heating comfort. Mr. Laughren's home, designed by Preston J. Bradshaw, St. Louis architect, has twelve rooms and is heated by oil burner. There are thirteen units of Webster System concealed radiation, installed by the Guaranteed Heating & Engineering Co., of St. Louis. Mr. Laughren says that with the Webster System he has avoided all of the worries that an inadequate heating system can cause. Radiators heat quickly and evenly, even on the coldest days. Operation is quiet. The concealed radiation harmonizes effectively with the decorative scheme. And, finally, the cost of heating is reasonably low.

"It is a source of delight to me to assure you that the Webster System with the concealed radiation warrants all of the statements made to me by your representatives.

"The house is heated quickly and evenly, and gets sufficient heat even on sub-zero days. The system is quiet, so much so that we practically forgot during the heating period that there was a heating system in the house."

Leo F. Laughren.



By placing the heating unit in the wall, Webster System concealed radiation saves considerable floor space and increases the attractiveness of the room.

The single-story residence of A. S. Hecht, Esq., near Union Springs, New York, has been satisfactorily heated during severest weather as the result of installing an Improved Webster System of Steam Heating and Webster System Radiation in the fall of 1933. Mr. Hecht's home has eight rooms and is heated by oil burner under control of an indoor thermostat. There are twelve units of Webster System Radiation installed by Smith & Pearson, Inc., Auburn, N. Y., Heating Contractors. Although the Hecht residence is almost completely exposed to the winds that blow off Lake Cayuga, no difficulty is experienced in heating all rooms evenly during sub-zero weather. The Webster System has given the Hecht family perfectly balanced heating in the coldest weather as well as in mild weather.

As to heating comfort, Mr. Hecht reports:

"We received satisfactory service even during the extremely wintry weather."

THE IMPROVED WEBSTER TYPE "R" SYSTEM— AN IDEAL SYSTEM FOR RESIDENCE HEATING

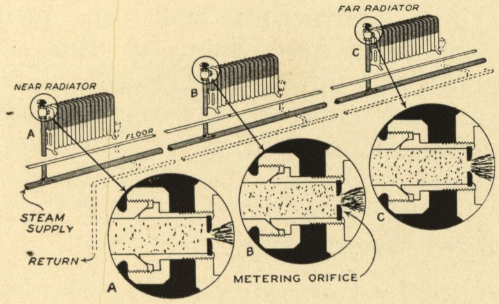


Fig. 9. How Webster Metering Orifices balance steam distribution with conventional cast iron radiators in the Type "R" System. These Orifices are sized so that all radiators receive their proportionate share of steam at the same time. The same effect is obtained where Webster System Radiation is used.

The Improved Webster Type "R" System is a two-pipe, gravity return, low pressure steam heating system using the following Webster equipment:

1. Webster Supply Valves including Webster Metering Orifices on Radiators.
2. Webster Thermostatic Traps on Radiators.
3. Webster System Radiation (Optional).
4. Webster Drip Traps at drip points of steam mains and risers, hot water generators, etc.
5. Webster Dirt Strainers or Dirt Pockets.
6. Webster Basement Equipment including Vent Trap with Vent Valve, Boiler Return Trap, Damper Regulator (on hand-fired coal burning systems), Boiler Protector, Gauges, etc.

The Improved Webster Type "R" System will also include equipment not of Webster manufacture such as boiler, piping, fittings, temperature control equipment, etc. It may also be installed in conjunction with automatic oil or gas burners or coal stoker equipment.

Balanced Distribution

The distinguishing feature of the *Improved* Webster System is the use of *accurately-sized Metering Orifices* at radiator supply connections and, where required, Intermediate Metering Orifices at points in branch mains. Metering Orifices when properly selected and installed accomplish a two-fold purpose. They effect even distribution of steam to all parts of the heating system; they permit the successful application of a centralized gradual-acting control.

In the older type (unorificed) system the nearest radiators become warm first while the farthest radiators do not begin to get warm until the others are filled. In the Improved Webster System *all radiators get steam at the same time and substantially in proportion to the need for steam.*

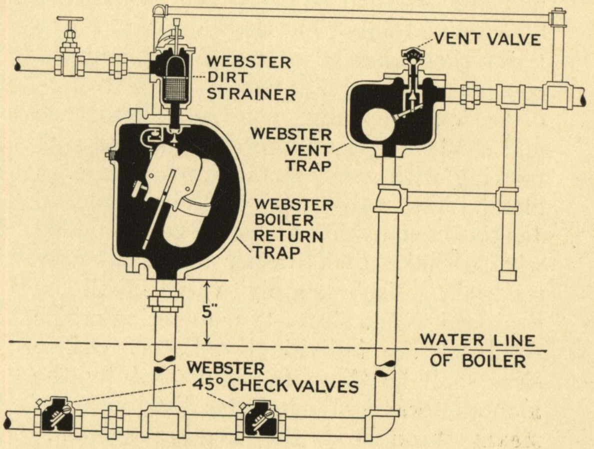


Fig. 10. Webster Basement Return Equipment consists of a Vent Trap and Vent Valve through which air from the return piping is discharged and overflow of water prevented, together with a Boiler Return Trap which assures positive return of water to the boiler regardless of fluctuating boiler pressure.

How to Select Webster System Radiation

In accordance with standard engineering practice first determine the number of sq. ft. of equivalent direct cast iron radiation required. Webster System Radiation of proper rating and dimension to meet the requirement can then be selected directly from the table of ratings.

Certified Rated Capacities

Webster System Radiators are rated by the uniform testing and rating method of the Convector Manufacturers' Association. *Certified Rated Capacities* are given in square feet of equivalent direct radiation (EDR) and radiation may be selected according to standard engineering practice with assurance that units so chosen will be fairly comparable with correspondingly rated units.

Suggested Architectural Specification

The following paragraph may be used as the basis of architectural specification for Webster System Radiation:

> "Furnish and install concealed radiators as manufactured by Warren Webster and Company and of size and type shown on plans. Installation shall be as recommended by the manufacturer. All radiators shall have thermostatic traps and supply valves built integrally into bronze headers. The tubes and fins of the heating element shall be made from non-corrosive metals. Tubes and headers shall be connected by Mueller Streamline Joints. The thermostatic trap interior shall have a renewable seat and 60° cone valve piece. The supply valve shall be of the quick-opening, non-rising stem type and shall include an improved molded ring packing with screwed take-up adjustment gland. The valve disc shall be standard Jenkins composition and shall be assembled with a shake-proof washer to permit easy renewal. Each supply valve shall be equipped with a sleeve-type metering orifice sized for the individual radiator. Orifice sizes shall be those recommended by the manufacturer for the uniform distribution of steam throughout the heating system."

Inquiries and Quotations

Inquiries for further information concerning Webster System Radiation may be addressed to the Main Office at Camden, New Jersey, or to the nearest branch office. Webster engineers are prepared and able to cooperate effectively with home owners, their architects, engineers and heating contractors.

Heating contractors will be provided promptly with quotations by the nearest branch office. A directory of Webster Offices is given on back cover of this catalog. Consult your local telephone directory for telephone numbers.

Standard Warranty

The standard warranty for Webster System Radiation is as follows:

> "We warrant all Webster System Radiation manufactured by us to deliver full rated capacity when installed in a manner approved by us and when operated under the conditions upon which the rated capacity is based.
>
> "We further warrant all equipment described in this catalog and sold by us to be free from defects in material and workmanship under normal use and service; our obligation under this warranty being limited to making good at our factory, any part or parts thereof which shall within one year from date of shipment from our factory be returned to our factory with transportation charges prepaid, and which our examination shall disclose to have been defective; this warranty being expressly in lieu of all other warranties expressed or implied and of all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of Webster System Radiation.
>
> "This warranty does not cover any labor charges for replacement of parts, adjustments, repairs, or any other work done. We assume no responsibility for consequential damages of any kind, and the purchaser or user by acceptance of this equipment, assumes the responsibility for the consequences of its use or misuse.
>
> "This warranty does not apply to any equipment which shall have been repaired or altered outside of our factory in any way so as, in our judgment, to affect its stability, nor which has been subject to misuse, negligence or operating conditions in excess of those stated in this catalog."

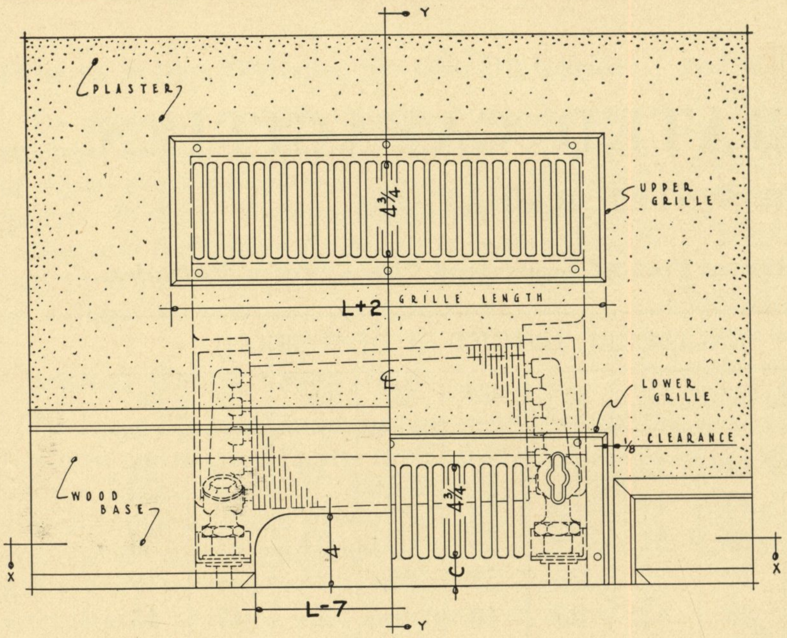
CERTIFIED RATED CAPACITIES

WEBSTER SYSTEM RADIATION

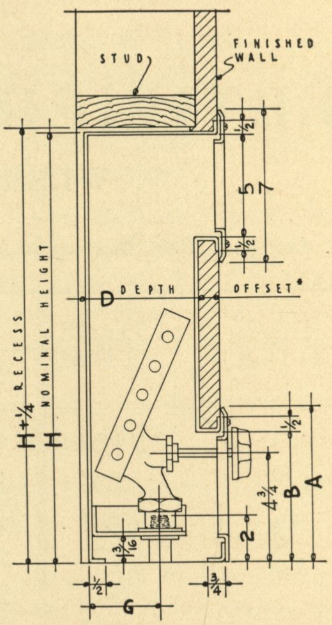
Heat Output Per Radiator in Square Feet of Equivalent Direct Steam Radiation

Depth (D Dim.)	Length (L Dim.)	ENCLOSURE HEIGHT (H DIMENSION)								
		18″	20″	25″	30″	40″	50″	60″	70″	80″
3″ (4 TUBE)	18″	10	11	13	15	17	18	19	20	21
	22″	14	15	17	19	22	24	25	26	27
	26″	17	18	21	24	27	29	31	32	33
	30″	21	22	25	28	33	35	36	38	39
	36″	25	28	32	35	40	43	45	47	49
	42″	31	34	39	43	48	52	55	57	59
	48″	36	39	45	50	57	61	64	67	69
	54″	40	44	52	57	65	70	74	77	80
5″ (5 TUBE)	18″	12	13	16	19	22	23	24	25	26
	22″	15	18	22	25	29	31	32	33	34
	26″	20	23	27	31	35	38	40	41	42
	30″	23	27	33	37	42	45	47	49	50
	36″	29	33	41	46	53	57	59	61	62
	42″	35	40	49	55	63	67	70	73	75
	48″	40	46	56	64	73	79	82	85	87
	54″	46	53	65	74	84	90	94	97	100
7″ (8 TUBE)	18″	17	19	22	25	28	29	30	31	32
	22″	23	25	29	32	36	39	40	41	42
	26″	29	32	37	41	45	48	50	51	52
	30″	35	38	44	48	54	57	59	61	62
	36″	44	47	54	59	66	71	74	76	77
	42″	54	58	66	72	80	85	88	91	93
	48″	62	67	76	84	93	99	103	106	108
	54″	69	76	88	96	107	113	117	120	122

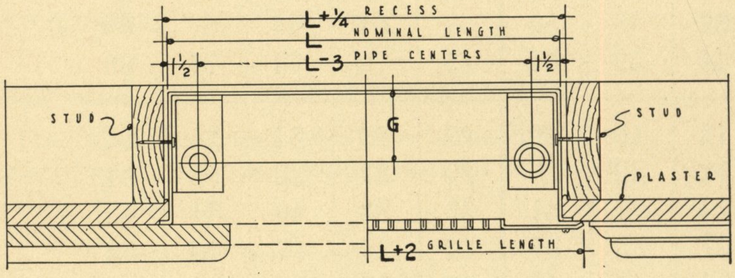
All dimensions given are nominal. Standard metal front and exposed cabinet type radiators not available in enclosure heights exceeding 30″.



ELEVATION



SECTION Y-Y



SECTION X-X

DESIGN AND INSTALLATION DATA

SIZE OF RECESS

Depth = D+Offset+⅛″
Length = L+¼″
Height = H+¼″

PIPING CONNECTIONS

All radiators are designed for ¾″ steam supply and ½″ return piping connections extending vertically to a height of 2″ above bottom of enclosure. Right-hand steam supply illustrated, either right hand or left hand furnished upon order.

DIMENSIONS

D Nominal	3″ (4 Tube)	5″ (5 Tube)	7″ (8 Tube)
D Actual	3½	4⅞	7½
A	7	7	10¼
B	6	6	9¼
C	1⅛	1⅛	2¾
G	2¾	3⅛	6¾

H Nominal	18	20	25	30	40	50	60	70	80
L Nominal	18	22	26	30	36	42	48	54	

All Dimensions in Inches and Subject to Slight Variation

As illustrated above, Type AK radiators may be installed with inlet grille or arched inlet opening, as preferred. If arched inlet opening is used, the opening is made in wood base by contractor. To permit access to heating element, a removable base section should be constructed as per details in Fig. 16, Page 19. Where arched inlet opening is used the minimum base height plus top molding is B+¾″.

Enclosure should be nailed to studding (or wood buck in masonry walls) in level position through nail holes provided in both ends of the enclosure as shown in section x—x, with the bottom edge coinciding with finished floor level. The heating element may be placed within the enclosure by rotating it slightly when inserting through inlet opening. The valve handle is held in position by frictional engagement with valve stem and projects approximately 1″ beyond face of lower grille.

*OFFSET—The standard enclosure is designed with an offset, or plaster thickness, of ¾″ but 1½″ offsets are obtainable for tile or other wall surfaces at no extra charge, *if requested when ordering*. Variations in the offset from the actual wall surface thickness can be provided for by inserting the enclosure more or less into the recess before nailing. The position of the enclosure grille flanges with respect to rough wall is established accurately by measurement at time of installation and should correspond to wall surface thickness adjacent to the enclosure.

Suggestions covering arched inlet designs and/or arrangement of base at either end of lower grille are on Page 19.

SIMILAR DATA FOR OTHER TYPES OF ENCLOSURES (SEE PAGES 6 AND 7) WILL GLADLY BE SENT UPON REQUEST.

As can be seen in Figure 11, all radiators have bottom outlets through union connections furnished as part of the radiator. Steam and return connections to radiators are not interchangeable; therefore, it is important before finally installing pipe to verify whether steam connection of each radiator is *right hand* (right end when you face enclosure) or *left hand* (left end when you face enclosure). Laterals from risers to radiator stub-ups should be sized in accordance with standard engineering practice, and should be installed with sufficient number of swings to allow for freedom of movement of pipe without disturbing radiator.

Where supply and return pipe pass through floors of poured concrete install sleeves of generous size so as to permit adjustment of slight inaccuracy of piping.

A heating element properly installed should have both union connections resting on gusset plates of enclosure for correct pitch and drainage.

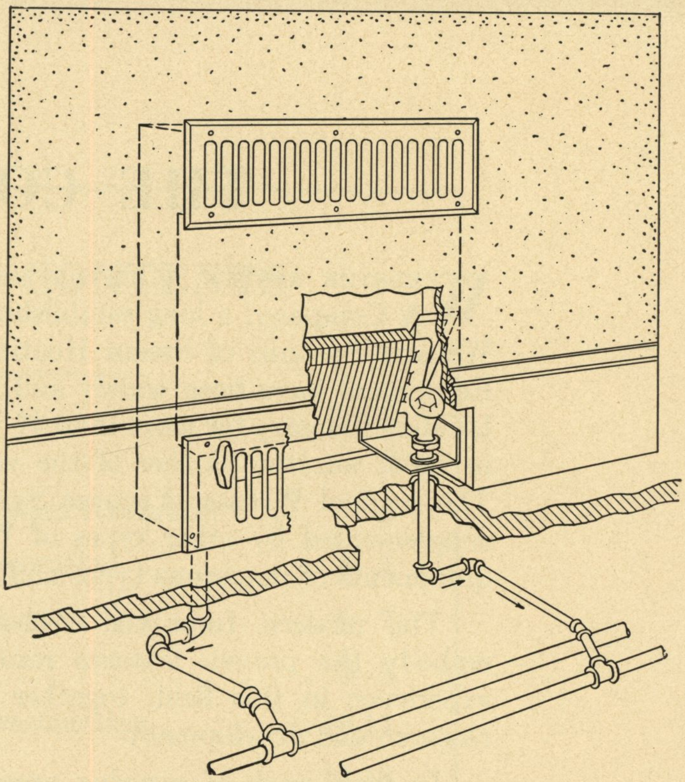


Fig. 11. Method of Making Pipe Connections.

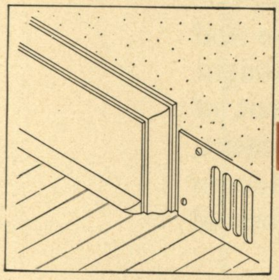


Fig. 12.

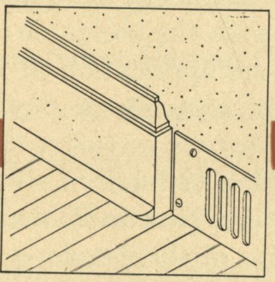


Fig. 13.

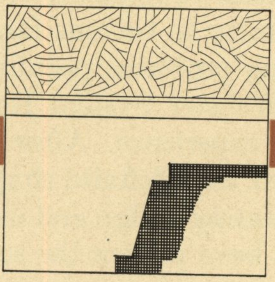


Fig. 14.

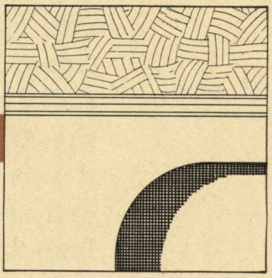


Fig. 15.

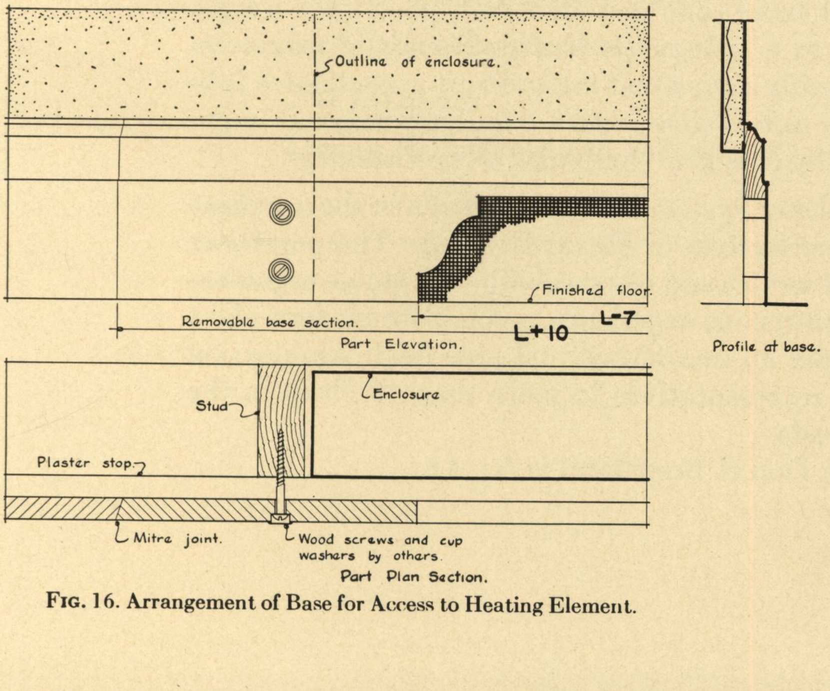


Fig. 16. Arrangement of Base for Access to Heating Element.

Figures 12 to 15, inclusive, show suggestions for treatment of wood base with inlet grille and arched inlet opening. Figure 12 shows the base turned back toward the wall, while Figure 13 shows the base turned down toward the floor. Figures 14 and 15 are suggestions for arched inlet designs. For those who prefer to attach the inlet grille directly to the wood base that is carried continuously across the inlet of the enclosure, install as illustrated in Figure 11. An opening must be made in the base equal in size to the inlet opening of the enclosure. The standard grille furnished is then attached to the base with wood screws. Because of the nearness of the grille screw holes to the edges of the base opening, clearance holes should be drilled in the wood base with a hand drill before attempting to insert screws. This will prevent the base from cracking.

In Figure 16 is shown a recommended arched inlet arrangement of base which permits access to the heating element.

THE COMPANY

WEBSTER SYSTEM RADIATION is a product of Warren Webster & Company, a long established leader of the heating industry. Webster Systems of Steam Heating and Webster Heating System Equipment have been widely and favorably known throughout the building industry for more than 47 years. The Company, established in 1888, was the pioneer of the vacuum system of steam heating. The original Webster Vacuum System of Steam Heating was soon supplemented by other types of Webster Systems meeting the requirements of numerous types and sizes of structures.

The modern Improved Webster Systems of Steam Heating embody the proven features resulting from the Company's long experience in this field, together with continuous and aggressive research and development.

In their work of assuring proper application and utilization of Webster System equipment, Webster engineers have had an admirable opportunity to become familiar with the steam circulation and steam heating problems peculiar to the application of light-weight radiation. Webster System Radiation is a logical development of this Webster experience. After three years of intensive development, it was offered as a definite simplification of modern steam, vacuum and vapor heating design and installation. Now more than 400 actual installations have proven the soundness of the development.

The field installation problem is vastly simplified because Webster System Radiation is far more than just another type of light-weight radiation—in addition to a *light-weight heating element of maximum efficiency and highest quality design and materials*, it consolidates into a single unit the *supply valve*, *orifice*, *return trap*, *enclosure* and *union connections*, all backed by a single, Undivided Responsibility.

The purchase of Webster System Radiation results in the purchase of an Improved Webster System of Steam Heating. The purchaser has the full assurance of service and responsibility of a stable organization with 47 years of continuous experience, a complete modern plant and ample resources, and an established and able field organization with sales and service representatives in more than 60 cities in the United States and Canada.

Financial Rating in Dun & Bradstreet is AA A1.

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To protect ourselves in our constant endeavor to make Webster Systems of Steam Heating and Webster System Equipment ever better, we reserve the right to change specifications and prices without notice.

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